CHAD®
drive™

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PRODUCT MANUAL

SmartDose®
Liquid Oxygen Portables

Model CTPT-3LPZ
Model CTPT-6LPZ

CAUTION Federal (USA) law restricts this device to sale by or on the order of a physician.

Important Information

Physician Information:

Name ____

Address ____

____

Telephone ____

Emergency Telephone _______________________________

Prescription Information:

Patient’s Name ____________________________________

Flow Setting (LPM) _________________________________

Set-Up Information:

Name of person setting up ___________________________

Oxygen Provider:

Company ____

Emergency Telephone _______________________________

This instruction guide was reviewed with me and I have been instructed on the safe use and care of the SmartDose Conserving Device.

____

Patient or Caregiver Signature Date

Welcome!

Thank you for choosing the SmartDose Liquid Oxygen Portable from CHAD Therapeutics.

The SmartDose Liquid Oxygen Portable gives you the freedom and confidence to live a more active life.

The SmartDose Liquid Oxygen Portable is the only conserver that monitors your breathing patterns and automatically delivers more oxygen when you need it most to help you stay active and saturated.

Before You Begin

Please read this entire manual before you use your SmartDose Liquid Oxygen Portable. If you do not understand the warnings, cautions and instructions, contact your medical equipment provider before using this equipment. Otherwise, there is a risk of injury to you or damage to the equipment.

When using oxygen products, expecially when children are present, you must follow several important safety precautions. Please read the following safety information before you use your SmartDose Liquid Oxygen Portable.

Product Classification

The SmartDose Liquid Oxygen Portable is classified as:

⧈ Class II Equipment

🧍 Type B Equipment

Not suitable for use in the presence of a flammable anesthetic mixture with air, or with nitrous oxide.

How SmartDose Works

SmartDose extends the use time from a supply of oxygen by only delivering oxygen during the portions of the breath that put the gas into the lungs. SmartDose delivers a volume of oxygen on each breath, right at the start of inhalation. It delivers the full dose (bolus) of oxygen within 2/3 of the inhale cycle. By doing so, it is not delivering oxygen at the end of inhalation or during exhalation, as other devices do.

The normal volume of oxygen that SmartDose delivers is 16 ml per setting, so that a setting of 2 delivers 32 ml of oxygen on each breath, in the first 2/3 of the inhale cycle.

SmartDose monitors a patient's breathing patterns and automatically turns up the oxygen volume by one setting (SportDose 1) during exertion, and if breath rate continues to rise, by another setting (SportDose 2). Many patients turn their settings up and down throughout the day, but this self administered approach is inconsistent and by the time most patients feel the need to turn it up, their oxygen levels have already dropped. SmartDose responds more quickly and consistently. SmartDose recognizes when exertion stops and lowers the volume back down to normal levels thus saving oxygen.
Again, this is often an improvement over manual adjustments since patients often forget to turn the volume down after exerting.
Most patients are able to be titrated at lower base settings due to SmartDose's efficient delivery and auto-adjusting features. This extends the use time of your oxygen supply.

SmartDose also uses a multi-valve system that has multiple delivery flow rates. The unit can deliver a volume at two flow choices. The unit constantly monitors the patient's breath rate and determines the lowest flow option to "fit" the oxygen into the first 2/3 of the inhalation cycle. By delivering at lower flows, the unit is more comfortable, and quieter than units that deliver at higher flows all the time.

Refer to Appendix for oxygen duration times at various settings.

NOTES:

Warranty Claim Procedures and Requirements

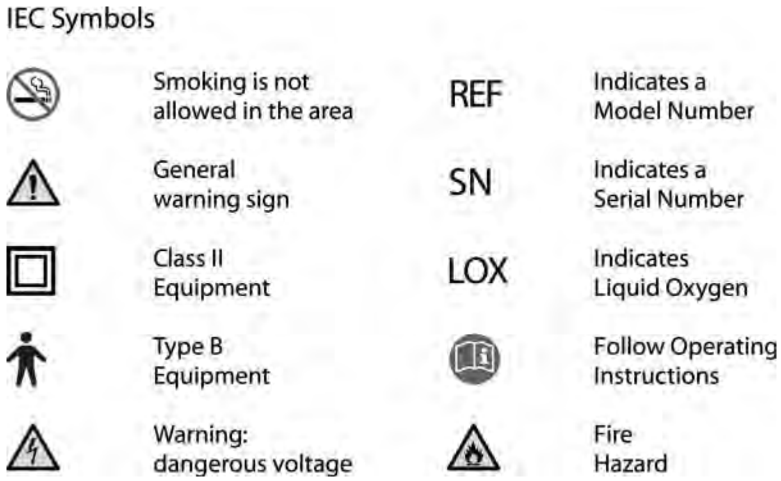
To obtain warranty service, you may return a defective product to CHAD Therapeutics, A Drive Medical Company, after receiving a Return Material Authorization number (RMA) from our customer service department 866-390-6628.

When calling for an RMA number, please have ready product identification information, including model number and serial number with a detailed description of the problem you are experiencing.

Once you have obtained an RMA number from CHAD, you must, within thirty (30) days, send the product freight-prepaid and insured to 2975 Horseshoe Drive South, Suite 300, Naples, FL 34104, USA. Products shipped to the factory must be properly packaged to prevent damage in transit. You must include the RMA number prominently displayed on the outside of your package. If you send your product to the factory without the RMA number prominently displayed on the outside of the package, it will be returned to you unopened.

Terms, Abbreviations & Symbols

This guide and the SmartDose Liquid Oxygen Portable product labeling uses the following terms, abbreviations and symbols:



IEC Symbols

🚭	Smoking is not allowed in the area	REF	Indicates a Model Number
⚠	General warning sign	SN	Indicates a Serial Number
⧈	Class II Equipment	LOX	Indicates Liquid Oxygen
🧍	Type B Equipment	📖	Follow Operating Instructions
⚡	Warning: dangerous voltage	🔥	Fire Hazard

Important Safeguards

When using oxygen products, especially when children are present, basic safety precautions should always be followed. Read all instructions before using. Important information is highlighted by these terms:

DANGER	Urgent safety information for hazards that will cause serious injury or death.
CAUTION	Information for preventing damage to the product.
WARNING	Important safety information for hazards that might cause serious injury.
NOTE	Information to which you should pay special attention.

Important safeguards are indicated through this guide; pay special attention to all safety information. Read all instructions before using. Save these instructions.

General Dangers & Warnings

In order to ensure the safe operation and achieve maximum benefit of the SmartDose Liquid Oxygen Portable, these instructions MUST be followed.

DANGER Fire hazard. Do not lubricate. Do not allow grease or oil from your hands or other source to come into contact with the internal tubing of the SmartDose Liquid Oxygen Portable. These solutions may be flammable and may cause injury.

DANGER Oxygen causes rapid burning. Do not smoke in the vicinity of your SmartDose Liquid Oxygen Portable or when you are near a person utilizing oxygen therapy. Keep the Smart Dose Liquid Oxygen Portable at least 5 feet (1.6M) from hot, sparking objects or open sources of flame.

Warnings

WARNING Read instruction manual first. Do not operate this equipment without first reading and understanding this instruction manual and the warning labels on the product. If you do not understand the warnings, cautions and instructions, contact your medical equipment provider or technical personnel before attempting to install or use this equipment; otherwise, injury or damage may occur.

WARNING Patient use only. The use of this device is limited to an oxygen patient. Oxygen MUST be used ONLY by an oxygen patient and is not intended to be distributed to any other individual for any purpose.

WARNING Use only authorized parts. Do not use parts, accessories, or adapters other than those authorized by CHAD Therapeutics.

Warranty Information

CHAD Therapeutics, a Drive Medical Company warrants to the original customer of its products that its products are free from defects in material and workmanship. Subject to the conditions and limitations set forth below, CHAD will, at its option, either repair or replace any part of its products that prove defective by reason of improper workmanship or materials. Repaired parts or replacement products will be provided by CHAD on an exchange basis. If CHAD is unable to repair or replace the product, it will refund or credit the current value of the product at the time the warranty claim is made.

This limited warranty does not cover any damage to this product that results from improper installation, accident, abuse, misuse, natural disaster, improper or excessive electrical supply, abnormal mechanical or environmental conditions, or any unauthorized disassembly, repair, or modification. This limited warranty also does not apply to any product which has been handled or packaged incorrectly, has been sold as second-hand or has been resold contrary to the US export regulations. This limited warranty covers only repair, replacement, refund or credit for defective CHAD products, as provided above. CHAD is not liable for, and does not cover under warranty, any loss of data or any costs associated with determining the source of system problems or removing, servicing or installing CHAD products.

- Duration of Warranty: 3 years from date of purchase

This limited warranty applies only to the original customer of the product for so long as the original end user customer owns the product.
This limited warranty is non-transferable.

FCC Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced technician for help.

WARNING ⚠

Do not use if. . .
Do not use the SmartDose Liquid Oxygen Portable if it:
It is not working properly.
Has been dropped or damaged.
Has been submersed in water.

Call a qualified technician for examination and repair.

WARNING ⚠

Unintended oxygen leakage. If any unintended leakage of oxygen is detected, do not attempt to use the product. Turn the product off. If leakage persists, place the product out doors and notify your medical equipment provider or service representative.

WARNING ⚠

Over pressure relief valve. The SmartDose Liquid Oxygen Portable is equipped with a pressure relief valve to ensure the user’s safety. When activated, this safety feature may make a slight hissing noise. If this noise occurs and persists, turn the unit off and contact your medical equipment provider or service representative.

WARNING ⚠

Always supervise children. Children should always be supervised around the SmartDose Liquid Oxygen Portable. Failure to do so may result in damage to the unit or personal injury.

WARNING ⚠

Use in accordance with your prescription. For your safety, the SmartDose Liquid Oxygen Portable must be used in accordance with the prescription determined by your physician.

WARNING ⚠

Not for use in emergency transport vehicles. The SmartDose Liquid Oxygen Portable is not intended to be used in emergency transport vehicles (ambulances or helicopters), or other similar areas where high levels of Electromagnetic Interference (EMI) may be expected.

Warnings About Handling

WARNING Use extreme care when filling.
Use extreme care when filling your SmartDose Liquid Oxygen Portable.

WARNING Keep unit in an upright position. Always ensure that the portable is in an upright position. Turning the portable on its side will cause venting of oxygen from the relief valve. It is normal to hear a loud noise when a full unit is moved into a horizontal position. The noise is excess gas pressure escaping from the relief valve.

Cautions & Notes

CAUTION Do not disassemble. The SmartDose Liquid Oxygen Portable contains no user serviceable parts. If service is required, contact your home medical equipment provider or authorized service center.

CAUTION Use AA alkaline batteries.   If using rechargeable batteries, it is recommended to use ≥1800 mAh Ni-MH (Nickel Metal Hydride) batteries. Both batteries must be of the same type capacity. Do NOT mix battery types.

CAUTION Federal law restricts this device to sale by or on the order of a physician.

CAUTION Portable and mobile RF (Radio Frequency) communications equipment can affect the SmartDose Liquid Oxygen Portable.

NOTE Have a full cylinder of oxygen on hand. CHAD Therapeutics recommends the medical equipment provider leave a full cylinder of oxygen with the patient after setting up the SmartDose Liquid Oxygen Portable, and instructing the patient to always keep a full cylinder on hand.

NOTE Allow portable to stabilize after filling. After filling the SmartDose Liquid Oxygen Portable, CHAD Therapeutics recommends waiting at least 5 to 10 minutes before using it. This allows the liquid oxygen to stabilize within the portable and better maintain the prescription flow setting.

NOTE Continuous Flow may be less than prescribed dose.

Appendix

Oxygen Duration of Portable

The SmartDose Liquid Oxygen Portable comes in two sizes. The table shows approximately how long liquid oxygen lasts at different settings for each model.

Flow	Setting	Approximate Hours of use
SmartDose Liquid Oxygen Portable 301 with SmartDose technology*	1	13.2
	2	7.6
	3	5.4
	4	4.1
	5	3.4
SmartDose Liquid Oxygen Portable 601 with SmartDose technology*	1	24.4
	2	14.1
	3	9.9
	4	7.6
	5	6.2

*These durations are based on the SmartDose Liquid Oxygen Portable being set in SmartDose mode, settings at a nominal 20 BPM.
For more information, refer to the "SmartDose Liquid Oxygen Portable Delivery Modes" section in this manual.

Transporting and Storing SmartDose Liquid Oxygen Portables

Preparing for Shipping

Prior to shipping the SmartDose Liquid Oxygen Portable, remove the batteries and empty any residual oxygen from the unit. Allow the portable to rest for at least 8 hours to empty.

Storage

Store the SmartDose Liquid Oxygen Portable in a cool, clean, dry area when not in use. Avoid storing in direct sunlight.

Battery Disposal

Dispose of all batteries in accordance with local, state, and federal regulations.

Specifications

Batteries Required*	2 AA batteries

*If using rechargeable batteries, it is recommended to use >1800 mAh Ni-MH (Nickel Metal Hydride) batteries. Do NOT mix battery types.

Oxygen Pressure	22 to 25 psig
CTPT-3LPZ Content Volume	0.33 liters (approx)
CTPT-6LPZ Content Volume	0.6 liters (approx)
CTPT-3LPZ Weight (empty)	3.5 lb
CTPT-6LPZ Weight (empty)	4.5 lb
Storage Temp/Transport	-20 to 50ºC
Operating Temperature	-8 to 40ºC
Storage Humidity (non-condensing)	0 to 95% RH
Operating Humidity	15 to 95% RH

Indications for Use

The SmartDose Liquid Oxygen Portable CTPT-3LPZ and/or CTPT-6LPZ provides a source of supplemental oxygen for ambulatory home healthcare patients, by vaporizing medical grade liquid oxygen and then dispensing it to the patient via an integral electronic conserving device. The SmartDose Liquid Oxygen Portable CTPT-3LPZ and/or CTPT-6LPZ is neither a life-sustaining nor a life-supporting device.

Provider Checklist

Before leaving the SmartDose Liquid Oxygen Portable with a patient, the following checklist MUST be completed:

Check all parts for shipping damage. In case of damage, do not use. Contact CHAD Therapeutics for further instructions.

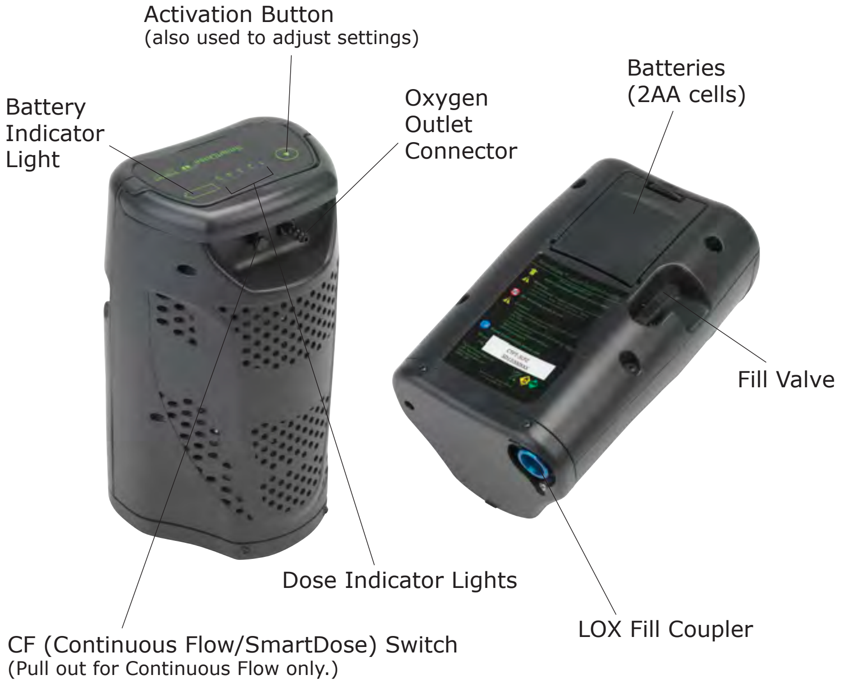
Make sure the SmartDose Liquid Oxygen Portable is compatible with the liquid oxygen source. Be sure to use a liquid oxygen reservoir with a compatible 99% coupler.

Instruct the patient on the safe operation of the SmartDose Liquid Oxygen Portable and all associated accessories and review ALL warnings.

Leave a copy of this product manual with the patient.

SmartDose Liquid Oxygen Portable Overview

The illustrations show the parts of the SmartDose Liquid Oxygen Portable.


Activation Button
(also used to adjust settings)
Battery Indicator Light
Oxygen Outlet Connector
Batteries
(2AA cells)
Fill Valve
Dose Indicator Lights
LOX Fill Coupler
CF (Continuous Flow/SmartDose) Switch
(Pull out for Continuous Flow only.)

Cleaning and Maintenance

Removing Frost

Under certain environmental conditions, frost may form on the vaporizer coil and on the case. As the unit thaws, the possibility exists for melted frost to leak from the bottom of the unit. You can remove it by wiping the case with a cloth. Exercise caution when placing the unit on valuable, water sensitive surfaces.

Cleaning and Maintenance

There are no user-serviceable components inside the LOX portable. Contact your medical equipment provider in the event that your SmartDose unit requires service.

Keep the exterior of the SmartDose Liquid Oxygen Portable clean using a clean, damp, oil-free, lint-free cloth.

Clean and dry the coupler on the SmartDose Liquid Oxygen Portable with a clean, dry, oil-free, lint-free cloth before each portable fill.

Cleaning and Maintenance

Chad Therapeutics recommends using only cannula specifically intended to be used with oxygen delivery systems.

Cannula should be capable of delivering up to 10 LPM of continuous flow; maximum length that can be used is 7 feet. Contact your medical equipment provider for recommendations and details.

Refer to the cannula manufacturer’s instructions for proper cleaning and maintenance procedures.

Troubleshooting

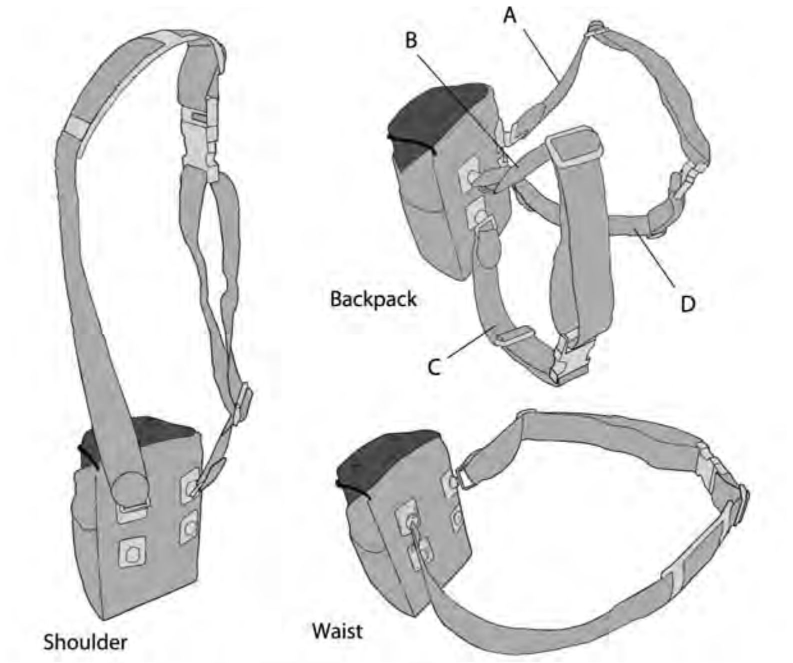
The following troubleshooting chart will help you analyze and correct minor system malfunctions. If the suggested procedures do not help, call your medical equipment provider. Do not attempt any other maintenance.

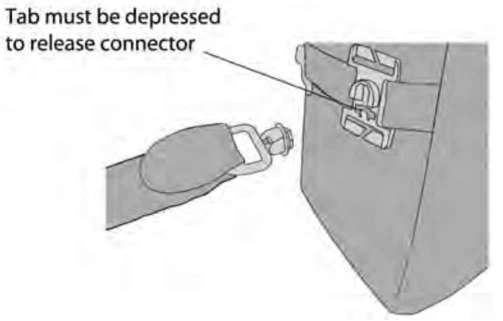
WARNING ⚠ To avoid electric shock hazard, do not disassemble the portable case. This should only be done by a qualified technician.

Problem	**Solution**
No indicator light(s)	Check that there are new (2 AA batteries).
	Check that the cannula tubing is properly connected and that the tube is not blocked.
	Check that the CF (Continuous Flow/SmartDose) switch is in the SmartDose position. Refer to the "SmartDose Liquid Oxygen Portable Delivery Modes" (pg. 10) section in this manual for additional information.

Carry Bag Options

The illustrations below show the recommended configurations for the *optional* carry bag for the SmartDose Liquid Oxygen Portable. To order a carry bag, refer to the chart below.





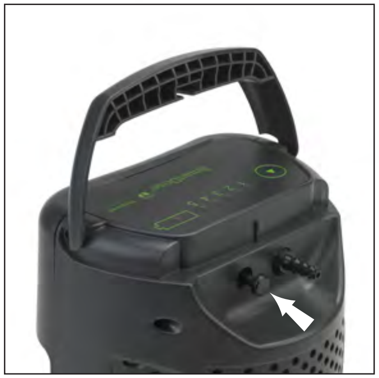
***OPTIONAL* Carry Bag for SmartDose LOX**	
Carry Bag for Model CTPT-3LPZ	CTBG-3L99
Carry Bag for Model CTPT-6LPZ	CTBG-6L99

SmartDose Liquid Oxygen Portable Delivery Modes

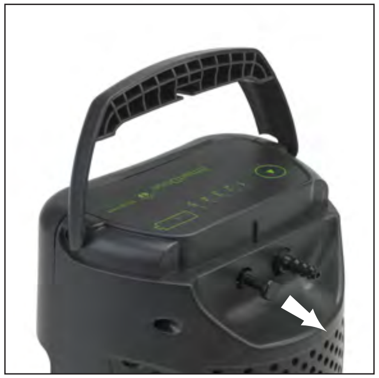
The SmartDose Liquid Oxygen Portable has two modes:
SmartDose and Continuous Flow.

To receive the benefits of SmartDose technology, set your SmartDose Liquid Oxygen Portable to SmartDose mode. Continuous Flow mode is offered as a backup option in case your batteries run out of power. Continuous Flow mode provides a steady flow of oxygen until you can replace the batteries; it does not offer the benefits of SmartDose technology. Also, be aware that your oxygen supply will be depleted rapidly when set to operate in Continuous Flow mode.

SmartDose mode
CF switch pushed in



Continuous Flow mode
CF switch pulled out



With the Portable in SmartDose mode, SmartDose technology detects changes in your breath rate and automatically adjusts the oxygen dose using a unique valving system. In this way, the SmartDose Liquid Oxygen Portable automatically adapts the oxygen flow to meet your needs as your activity level goes up and down throughout the day. After you have set the flow rate to your prescribed dose, there is no need to manually change the oxygen flow rate during the day— SmartDose technology does it for you.

SmartDose Technology helps you in two ways:

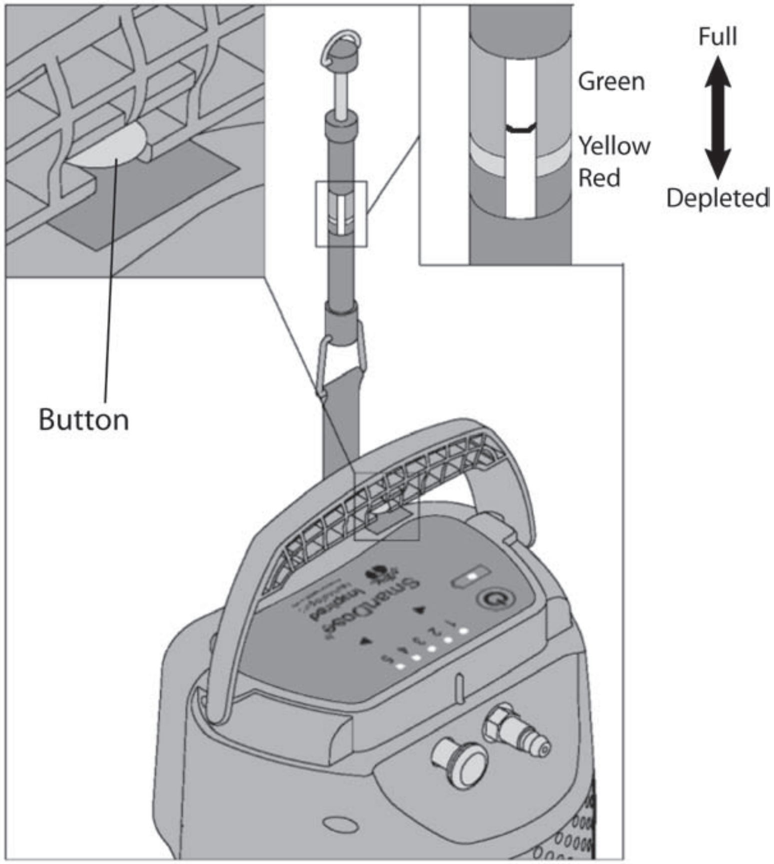
When you are active, a higher oxygen dose helps reduce feelings of breathlessness and stay active. When you are at rest and your breathing rate slows down, SmartDose technology adjusts the oxygen dose to the lower level that meets your needs. Keeping the oxygen flow rate as low as possible helps to extend oxygen duration, minimize nasal dryness and provide quieter therapy.

Checking the Level of Liquid Oxygen

The SmartDose Liquid Oxygen Portable comes provided with a gage to determine the amount of oxygen contained. Follow these steps for using the contents gage.

1. Remove Portable from bag or any other container you might be using. Slide the button on the gage strap into the slot on the Portable handle. Lift the Portable from the top D-ring on the gage to suspend it.

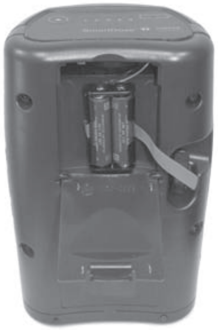
2. Let the portable stabilize (do not bounce or shake it) for about 5 seconds. Observe the location of the slider marker in the gage window.



Changing the Batteries

When the red battery indicator light begins blinking red, it means the SmartDose Liquid Oxygen Portable's batteries are low and it's time to replace them. A continuous, non-blinking red light means the batteries are dead. Until you can replace the batteries, you should switch the portable to Continuous Flow mode by pulling the CF switch out. Leave the equivalent liter flow setting, as indicated by the Dose Indicator Lights, at your prescribed setting. Continuous Flow mode does not require batteries and will deliver a continuous flow of oxygen, but this mode also significantly shortens the oxygen duration of your portable.

Follow these steps to replace the batteries.



1. Open the battery compartment on the back of the portable.
2. Remove old batteries from the compartment by pulling the ribbon to dislodge each battery.
3. Place the batteries in the battery compartment matching the designations in the battery holder. Ensure that the ribbon is placed below the batteries to aid in future removal. Confirm that all batteries are oriented properly, with the negative (-) pole touching the springs in the battery compartment.
4. Close the battery compartment lid. Turn the unit back on by holding the Activation Button. Verify that the batteries are installed correctly by pushing the CF switch in and adjusting the setting by pressing the Activation Button to cycle through the Dose Indicator Lights stopping at your prescribed setting. The battery indicator light should start to blink red, then green, and the portable can now be used.

WARNING ⚠ Using the SmartDose Liquid Oxygen Portable in Continuous Flow mode (CF Switch pulled out) will use oxygen at a faster rate than using it in SmartDose mode. Monitor the contents of your SmartDose Liquid Oxygen Portable as described in "Checking the Level of Liquid Oxygen" so you do not run out of oxygen.

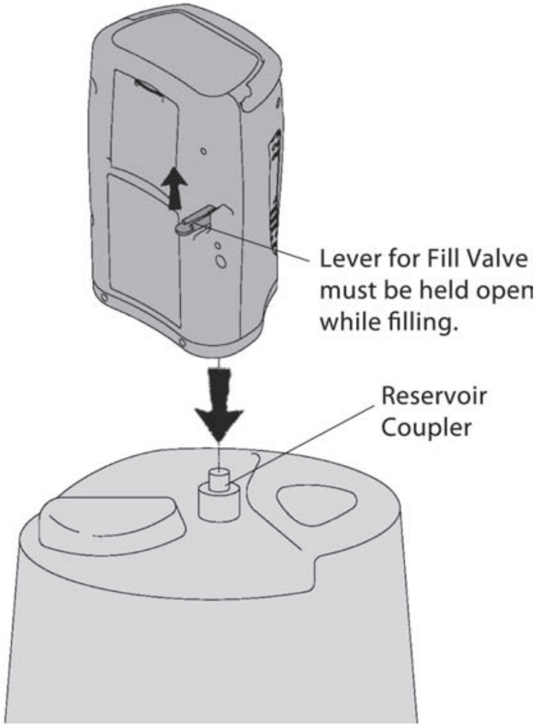
NOTE ⚠ When using the SmartDose Liquid Oxygen Portable in Continuous Flow mode, the indicator light will NOT light up green or red with each breath. Turning the setting all the way down via the Activation Button will not completely stop the flow of oxygen. To stop the flow of oxygen push the CF switch in & power off.

Filling a SmartDose Liquid Oxygen Portable

The SmartDose Liquid Oxygen Portable has a 99% oxygen (blue) coupler that lets you fill a SmartDose Liquid Oxygen Portable from a Puritan Bennett or Caire liquid oxygen (LOX) reservoir.

To fill your SmartDose Liquid Oxygen Portable, follow the instructions in the manul for your oxygen source, and note all applicable warning and cautions. All terms abbreviations and symbols, safeguards, cautions, warnings, notes and indications for use within this manual still apply.

Please note, the Fill Valve must be held open during the fill process shown below:



Step 1
Fully press Portable onto reservoir coupler.

Step 2
While maintaining downward pressure, open the fill valve.

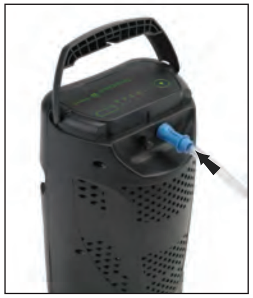
Step 3
Fill until "sputtering" sound occurs which typically indicates the portable is full.

Step 4
Close the fill valve and remove the Portable from the reservoir.

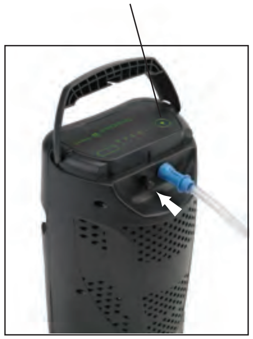
Starting Oxygen Delivery from the SmartDose Liquid Oxygen Portable

To receive oxygen from your SmartDose Liquid Oxygen Portable, follow these steps.

1. Push the cannula breathing tube firmly onto the oxygen outlet port. Adjust the cannula breathing tube to the proper position on your nose so that you will be able to breathe the oxygen comfortably.



2. Turn on the SmartDose Liquid Oxygen Portable by pressing and holding the Power Button until all of the numerical LEDs (1 through 5) light up.



3. Set your prescribed setting (1 to 5) by pressing the Activation Button until the correct setting is illuminated. Be sure that the CF (Continuous Flow/SmartDose) switch is pushed in as shown, confirming that your Liquid Oxygen Portable is in the SmartDose mode.

4. Gaseous oxygen is now flowing from your SmartDose Portable, and with each breath you should receive your set dose of oxygen and the set Dose Indicator Light will illuminate with each breath.

   In order for the SmartDose Portable to determine resting breath rate, the patient must rest 1-2 minutes before beginning activity.

5. Keep an eye on your SmartDose Liquid Oxygen Portable's battery power.
   - The Battery Indicator Light only monitors battery power and does not indicate whether there is liquid oxygen in the reservoir.
   - When the battery indicator lights up red with each breath, it is time to replace the batteries.
   - The battery indicator will remain lit red (not blinking with each breath) if the batteries are totally depleted.

NOTE ⚠

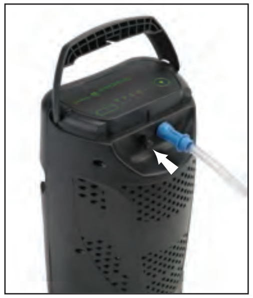
If the batteries are dead and you cannot replace them, switch to Continuous Flow mode by pulling the CF switch out. The unit will deliver 2 liters per minute of flow and cannot be adjusted.

Continuous Flow mode does not require batteries.

There is no need to change your setting with the Activation Button.

See the "Changing the Batteries" (pg 14) section in this manual for more information.

6. To stop continuous, push the CF switch in and hold the power button until the power is off. The lights will illuminate and count down from 5-1 and then shut off.



NOTE ⚠

If the SmartDose Liquid Oxygen Portable is in Continuous Flow mode, a small amount of oxygen will still be delivered. The portable must be powered off and the CF switch pushed in to completely turn off the flow of oxygen.

NOTE ⚠

If using rechargeable batteries, it is recommended to use ≥1800 mAh Ni-MH (Nickel Metal Hydride) batteries. Do NOT mix battery types.